Please cancel claims 17-26 without prejudice.

REMARKS

Claim 1 has been amended, support for which may be found, *inter alia*, on page 1, lines 7-9 of Applicants' specification. Claims 17-26 have been canceled without prejudice, in view of being withdrawn from consideration. With entry of this amendment, claims 1-16 will be pending.

Claims 1-16 were rejected under 35 U.S.C. § 102(a) as being anticipated by U.S. Patent No. 6,245,435 issued to O'Brien ("O'Brien") or, alternatively, under 35 U.S.C. § 103(a) as being obvious over O'Brien. Applicants respectfully traverse each of these rejections.

Applicants also note that the Examiner has identified O'Brien as 35 U.S.C. § 102(a) prior art. Applicants expressly reserve the right to antedate this reference. In other words, Applicants in no way concede that O'Brien is prior art.

First, the Examiner rejected independent claim 1 as being anticipated by O'Brien.

Independent claim 1 recites a process for depositing a film onto a bare or unplated zinc or zinc alloy substrate. The process comprises directly depositing a film onto a portion of the substrate by physical vapor deposition. The film may be a metal film, a ceramic film or a combination thereof. The metal film may include chromium, nickel, titanium, zirconium or a combination thereof. The ceramic film may include a nitride, a carbide, an oxide or a nitroxide or chromium, nickel, titanium, zirconium or a combination thereof.

The Examiner contends that O'Brien discloses that "the substrate can be zinc and [that] the coating technique used is PVD (col. 2, lines 21-23)." Office action, page 3. The portion of O'Brien that the Examiner cites follows: "Physical vapor deposition (PVD) is a collective name for a class of processes which have become particularly popular in the U.S. in the 1990s for application of a durable, scratch resistant polished brass finish to zinc, plastic, steel or brass substrates." Col. 2, lines 21-23

The Examiner further contends that "the coating material is ZrN (lines 56-66)." Office action, page 3. The cited portion of O'Brien, namely, col. 2, lines 56-66, as well as the remainder of the paragraph, namely, col. 3, lines 1-7, follows:

> It has recently been determined that the ZrN finish is unusual in that it provides acceptable corrosion performance when applied to corrosion sensitive substrates such as zinc, *in conjunction with a chrome electroplate corrosion barrier system*. In the

past, ZrN has only been used to provide a brass appearing substrate. The present invention is specifically focused on processes, and articles of manufacture made thereby, in which ZrN, ZrCN, HfN and HfCN can be used to provide colors other than brass and yet retain the corrosion performance which has been determined to be provided by ZrN. It has also been determined that the use of other metals in the finish decorative layer, such as titanium, aluminum or chromium will actually degrade the corrosion resistance performance of the entire coating. Thus, the present invention is specifically directed to maintaining corrosion performance, through the use of only Zr and Hf as the principal components of the outer layer, but yet providing various colors other than brass by manipulation of the process parameters.

Col. 2, lines 56-66 to col. 3, lines 1-7, emphasis added.

O'Brien, however, does not teach, suggest or enable the subject matter of independent claim 1. For example, O'Brien does not teach or suggest directly depositing a metal film, a ceramic film or a combination thereof onto a portion of a bare or unplated zinc or zinc alloy substrate by physical vapor deposition. Instead, O'Brien discloses, and requires, at least one intermediary strike layer between the metal substrate and ZrN layer as discussed in more detail below.

Focusing on O'Brien's drawing, which is a partial section of an article manufactured in accordance with the O'Brien's disclosure, "the substrate is indicated at 10 and preferably is of a material which is essentially free of surface flaws and porosity. It is preferably chosen from the group comprising brass, a metal glass, and zinc castings produced by dual phase casting (DPC), also known as semi-solid casting, slush casting or thixoforming." Col. 7, lines 1-8.

"Directly adjacent the substrate 10 is the corrosion protection layer 12 which may be one or more layers of copper, nickel and chromium. Such corrosion protection layers are well known in the art and there may be one such layer or more. Alternatively, the corrosion protection layer may be chosen from one of the group comprising nickel; duplex nickel, nickel/palladium; nickel, tungsten and boron; or nickel and tin. *All of these corrosion protection layers are detailed in the prior art reference above.*" Col. 7, lines 21-28, emphasis added.

O'Brien discusses this "prior art reference above" in the following paragraph:

> The prior art, with respect to corrosion protection of metallic corrosion sensitive substrates, can be summarized using the example of chrome *electroplate* on a zinc die casting. Many

> household objects, such as faucets or door handle sets, contain decorative components consisting of a zinc die cast substrate or plastic injection molded substrate which is protected by a finish comprising a stack of copper, nickel and chrome *electroplating layers*. In this finish system, the function of the copper layer (also known as the "cyanide copper" layer or "strike" layer) is to promote good adhesion between the substrate and subsequent layers. The function of the nickel layer or layers is to provide a measure of corrosion protection and create the desired surface texture, commonly a mirror-bright reflective surface. The purpose of the chrome layer is to provide the desired color, to provide the desired abrasion resistance, to provide the desired resistance to noxious chemicals such as strong acid or alkali commonly found in household cleaners, and to further improve the corrosion resistance of the combination. In a well known variant of the basic scheme described above, a thicker copper layer known as an "acid copper" layer, may be interleaved between the copper strike and the nickel layers. The function of the acid copper layer is, inter alia, "leveling"; to cover over completely the preceding layers, to close up any cracks or pores in the layers below, and to smooth over any roughness in the surface."

Col. 3, lines 7-33, emphasis added.

In other words, the corrosion protection layer 12 is an electroplated strike layer that is used to promote good adhesion between the substrate and subsequent layers, and more particularly, the substrate 10 and the insulating layer 14.

"Adjacent to the corrosion protection layer 12 is an insulating layer 14 which is electrically non-conducting or at least has a very high electrical resistance. The insulating layer may be chosen from the group consisting of oxides of Ti and Zr, SiO_2,SiOxCyHz, Al_2O_3, AlOxCyHz, Zr_3N_4, ZrxNyCz, Hf_3N_4 or HfxNyCz, or other metals which form insulating compounds isostructural with Zr_3N_4. This layer may be applied by a PVD process." Col. 8, lines 1-8.

"Between the insulating layer 14 and the outer decorative coating there is a strike or adhesive layer 16 formed of compounds of Zr and/or Ti." Col. 8, lines 20-23.

Finally, "the outer layer 18 provides the desired decorative color and will be applied with the process parameters set forth in the following table and will be chosen from the group consisting only of ZrN, ZrCN, HfN and HfCN. It should have a minimum thickness of about 0.015 micron and a nominal thickness of about 0.35 micron. Those skilled in the art of PVD deposition recognize that the term ZrN refers not simply to the compound Zr_1N_1, but rather to a film containing principally the atomic species Zr and N. Similarly, ZrCN denotes a film

containing the species Zr, C and N and $SiO_xC_yH_z$, is a film containing the species Si, O, C and H." Col. 8, lines 26-36. The "outer layer [is] applied by PVD, and chosen from one or more of only Zr, N,C and Hf." Claim 1.

Accordingly, the ZrN, which the Examiner contends is the "coating material," is actually what O'Brien defines as the outer layer 18. But this "coating material" or outer layer 18 is not directly deposited onto a portion of the bare or unplated zinc or zinc alloy substrate as Applicants claim. In fact, three layers exist between O'Brien's outer layer 18 and the substrate 10. More particularly, between "the insulating layer 14 and the outer decorative coating [18] there is a strike or adhesive layer 16 formed of compounds of Zr and/or Ti." Col. 8, lines 20-23. The insulating layer 14 is directly adjacent the corrosion protection layer 12. Again, the corrosion protection layer 12 is an electroplated strike layer that is used to promote good adhesion between the substrate 10 and the insulating layer 14. As discussed above, the corrosion protection layer is electroplated, and is not deposited onto the substrate by PVD. Consequently, O'Brien does not teach or suggest "directly depositing a film onto a portion of the substrate by physical vapor deposition."

Moreover, even assuming *arguendo* that the insulating layer 14 may be construed as a metal film (instead of the Examiner's construction of the outer layer being the metal film), the insulating layer 14 is still not directly deposited onto a portion of the substrate by physical vapor deposition. Instead, the insulating layer 14 relies on the corrosion protection layer or strike layer 12 to ensure its adhesion to the substrate 10. *See, again,* Col. 3, lines 7-33.

Regardless, Applicants were fully aware of such strike layers in the prior art:

> Commercial processes for manufacturing tools and decorative products on low melting point metal products such as zinc or zinc alloys, often deposit a "seed" or "strike" layer or a plated metal layer or layers on the substrate before deposition of the decorative finish layer(s).

Applicants' specification, page 2, line 20 to page page 3, line2.

> A strike, seed or plated layer(s) is/are first deposited on the commercial products for a variety of reasons. These include improvement of film adhesion, reducing the stresses caused by differing coefficients of expansion between the substrate and the decorative film and reduction of galvanic corrosion at the interface between the substrate and the film layer. Sometimes a greater problem is "outgassing" of substrate atoms and ions, which corrupts the plasma composition and creates weaknesses in the resulting film structure. These weaknesses can lead to corrosion and/or discoloration, which can disfigure the film. Such weaknesses can even lead to corrosion beneath the film

which can eventually cause local film separation or delamination of the film or other layers within the substrate.

These problems can be substantially and unexpectedly overcome by utilizing the process of this invention to manufacture a variety of objects including architectural hardware. This is particularly true where the decorative films are titanium nitroxides and zirconium nitroxides. These materials can have desirable titanium and zirconium nitride colors.

The problems and complexity associated with prior art film manufacturing methods rests on the fact that low melting temperature metal substrates, e.g., zinc, currently used in forming architectural and other commercial hardware can outgas unacceptably under exposure to conditions inherent in deposition of high melting point refractory metals, metal nitrides, carbides and oxides and nitroxides and similar ceramics.

Applicants' specification, page 4, line 4 to page 5, line 4.

Consequently, Applicants sought and discovered a method for directly "depositing a specific type or types of film on a bare or unplated zinc or a bare or unplated zinc alloy substrate through physical vapor deposition." Applicants' specification, page 5, lines 7-9.

In view of the foregoing, Applicants respectfully request withdrawal of the 102 rejection.

The Examiner also rejected independent claim 1 under 35 U.S.C. § 103(a) as being obvious over O'Brien. While Applicants assume that the 103 rejection was issued specifically with regard to "depositing a film onto only a portion of the substrate albeit the entire substrate," Applicants have addressed this rejection to ensure the amendment is fully responsive. Applicants have focused on the Examiner's *prima facie* case of obviousness with respect to amended independent claim 1.

To establish a *prima facie* case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The Examiner has not directed Applicants' attention to any portion of O'Brien that provides some suggestion or motivation to modify the invention discussed therein. None of the many portions of O'Brien cited above provide this missing suggestion or motivation. Second, O'Brien provides no reasonable expectation of directly depositing a film onto a portion of the bare or unplated zinc or zinc alloy substrate by physical vapor deposition. Instead, O'Brien only indicates that a corrosion protection layer 12 is used. In fact, O'Brien claims this requirement in independent claim 1. O'Brien's requirement of a corrosion protection layer 12 or strike layer is consistent with what was otherwise known in the prior art. The portions of Applicants' specification cited above corroborate this. Finally, O'Brien taken alone, or combined with what was generally known in the art, still does not teach or suggest, directly depositing a metal film, a ceramic film or a combination thereof onto a portion of the bare or unplated zinc or zinc alloy substrate by physical vapor deposition. Applicants respectfully remind the Examiner that deficiencies of references cannot be saved by appeals to "common sense" and "basic knowledge" without any evidentiary support. *In re Zurko*, 258 F.3d 1379 (Fed. Cir. 2001).

Consequently, the Examiner has failed to establish a *prima facie* case of obviousness with respect to independent claim 1.

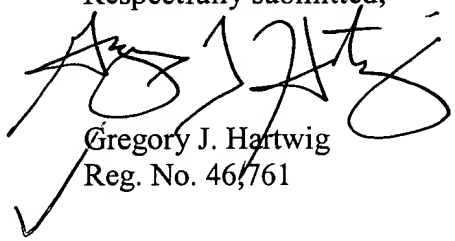
In view of the foregoing, Applicants respectfully request withdrawal of the 102 and 103 rejections, and allowance of independent claim 1 and its dependent claims 2-16.

CONCLUSION

Reconsideration and allowance of claims 1-16 are respectfully requested.

Should any issues remain, the Examiner is strongly encouraged to contact the undersigned by telephone at the number listed below. In addition, the undersigned again requests a telephonic interview with the Examiner after he has had an opportunity to review this amendment, but before he issues a final Office action.

Respectfully submitted,



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MARKED-UP VERSION OF CLAIMS

1. (Amended Once) A process for depositing a film onto a bare or unplated zinc or zinc alloy substrate, the process comprising:

directly depositing a film onto a portion of the substrate by physical vapor deposition, the film being a metal film, a ceramic film or a combination thereof,

wherein the metal film includes chromium, nickel, titanium, zirconium or a combination thereof, and wherein the ceramic film includes a nitride, a carbide, an oxide or a nitroxide or chromium, nickel, titanium, zirconium or a combination thereof.

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